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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/737,312	12/16/2003	Glenn M. Amber	15876-46037	5952

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EXAMINER	
HOFFBERG, ROBERT JOSEPH	

ART UNIT	PAPER NUMBER
2835	

DATE MAILED: 08/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/737,312	AMBER ET AL.	
	Examiner	Art Unit	
	Robert J. Hoffberg	2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 August 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 5-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 5-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

Response to Arguments

1. Applicant's arguments with respect to claim1-3 and 5-14 have been considered but are moot in view of the new ground(s) of rejection.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the heat-conducting member having one or more relief volumes including the lower surface defining the relief volumes (claims 1 and 13) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shah et al. (US 5,127,837) in view of Andric et al. (US 6,504,243).

With respect to Claim 1, Shah et al. teach a system for coupling a heat sink to an electrical device having one or more components independently of a clamping member that is used to place a coupling force between one or more electrical devices and a substrate to which the one or more electrical devices are to be electrically connected, the system comprising: a clamping member (Fig. 2, #14, #52, #54 and Fig. 10, #63) adapted to push (Col. 9, lines 1-2) the one or more electrical devices (Fig. 10, #12) against the substrate (Fig. 9, #68), to assist in electrical connection between the one or more electrical devices and the substrate, the clamping member defining a through-hole (Fig. 1, for #55 in #52 and Fig. 10, #63) leading to each electrical device; a heat-conducting member (Fig. 1, #55 and #56) in a through-hole of the clamping member and adapted to thermally contact the electrical device to conduct heat into or out of the electrical device having a lower surface (#56 bottom); a resilient member (Col. 7, line 32) located within the clamping member through-hole in which the heat-conducting

member is located, for urging the heat-conducting member into thermal contact with the electrical device; and a heat sink (Fig. 1, #58) in thermal contact with the heat-conducting member. Shah et al. fail to teach a lower surface of the heat-conducting member having one or more relief volumes. Andric et al. teach a lower surface (Fig. 4, #56 lower surface) of the heat-conducting member (#56) includes one or more relief volumes (relief in #56 for #60) that prevent the lower surface of the heat-conducting member from contacting a top surface of one or more components of the electrical device.

With respect to Claim 2, Shah et al. further teach that the heat-conducting member comprises a post (Fig. 1, #55) with an enlarged end (Fig. 1, #56) that contacts the electrical device.

With respect to Claim 3, Shah et al. further teach that the through-hole in the clamping member in which the heat-conducting post is located defines a shoulder (see Fig. 1) between the heat sink and the electrical device, the shoulder defining a through-hole width that is less than width of the enlarged end of the post, to allow the post to move within the through-hole yet prevent the post from being withdrawn from the through-hole.

With respect to Claim 5, Shah et al. further teach that the resilient member comprises a coil spring (see Fig. 1 and Col. 7, line 32) located around the heat-conducting member.

With respect to Claim 6, Shah et al. further teach that one end of the resilient member contacts the heat-conducting member and the other end contacts the clamping

member such that the resilient member is compressed (see Fig. 1) when the clamping member is moved toward the substrate.

With respect to Claim 7, Shah et al. further teach that the heat-conducting member protrudes (see Fig. 1) from the clamping member.

With respect to Claim 8, Shah et al. further teach that the heat sink is located outside (see Fig. 1) of the clamping member

With respect to Claim 9, Shah et al. further teach that the heat sink directly contacts (Fig. 1 #55 and #58) the heat-conducting member.

With respect to Claim 10, Shah et al. discloses the claimed invention except for the heat-conducting member and heat sink being integral. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the heat-conducting member and heat sink integral , since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art. *Howard v. Detroit Stove Works*, 150 U.S. 164 (1893).

With respect to Claim 11, Shah et al. further teach that the clamping member directly contacts (see Fig. 10) the electrical device.

With respect to Claim 12, Shah et al. further teach the clamping member directly contacts some but not all of the electrical device upper surface.

With respect to Claim 13, Shah et al. teach a system for coupling a heat sink to an electrical device having one or more components independently of a clamping member that is used to place a coupling force between one or more electrical devices

and a substrate to which the one or more electrical devices are to be electrically connected, the system comprising: a clamping member (Fig. 10, #63) adapted to push (Col. 9, lines 1-2) the one or more electrical devices (Fig. 10, #12) against the substrate (Fig. 9, #68), to assist in electrical connection between the one or more electrical devices and the substrate, the clamping member defining a through-hole (Fig. 1, for #55 in #52) leading to each electrical device; a heat-conducting post (Fig. 1, #55) in a through-hole of the clamping member with an enlarged end (Fig. 1, #56) adapted to thermally contact the electrical device to conduct heat into or out of the electrical device; a heat sink (Fig. 1, #58) in thermal contact with the heat-conducting post; and a spring (see Fig. 1 and Col. 7, line 32) in the through-hole in the clamping member adapted to be compressed between the clamping member and the enlarged end of the post, to assist in thermal contact between the enlarged end and the electrical device. Shah et al. fail to teach a lower surface of the heat-conducting member having one or more relief volumes. Andric et al. teach a lower surface (Fig. 4, #56 lower surface) of the heat-conducting member (#56) includes one or more relief volumes (relief in #56 for #60) that prevent the lower surface of the heat-conducting member from contacting a top surface of one or more components of the electrical device.

With respect to Claim 14, Shah et al. further teach that the spring comprises a coil spring (see Fig. 1 and Col. 7, line 32) located around the post.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the heat-conductor member of Shah et al. with the relief volume of Andric et al. for the purpose of providing clearance in the lower surface of the

heat-conducting member for the electrical device and a thermal conductive – electrically insulating material to cool, but not short the electrical device.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lorenzetti et al. (US 4,899,210), Culver (US 5,055,909), Watson et al. (US 5,168,926), Culver (US 5,200,365), Wong et al. (US 6,101,093), MacGregor et al. (US 6,101,096), Lee et al. (US 6,318,451) and Lin et al. (US 6,412,546) teach a lower surface of the heat-conducting member includes one or more relief volumes that prevent the lower surface of the heat-conducting member from contacting a top surface of one or more components of the electrical device.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert J. Hoffberg whose telephone number is (571) 272-2761. The examiner can normally be reached on 8:30 AM - 4:30 PM Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn D. Feild can be reached on (571) 272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MICHAEL DATSKOVSKIY
PRIMARY EXAMINER

RJH

08/18/06